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CORE SYLLABIFICATION AND THE GRID: EXPLAINING QUANTITY SENSITIVITY*

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1 INTRODUCTION

This paper focuses on the phenomenon known as **Quantity Sensitivity**—the ability of syllables to influence the building of higher metrical structure based on their "weight." In broad terms, quantity sensitive (QS) languages are those that appear to make a distinction between "heavy" and "light" syllables. For example, in the calculation of stress or accent placement, heavy syllables are by definition those syllables that disturb the metrical structure in a particular way. They interrupt the otherwise orderly metrical parsing so as to always occupy the dominant position in a foot, thereby "attracting" stress.

There happens to be an intrinsic difference between heavy and light syllables that correlates with their difference in behavior: a heavy syllable is one whose "rime" contains, in some sense, *more* material than the rime of a light syllable. The most obvious way for one rime to contain more material than another is for it to have more segments. Thus, in many languages, CV syllables behave as light, whereas any syllable with a branching rime (CVV or CVC) counts as heavy.[1] In some languages, not only is the number of the rime segments crucial, but their sonority is also a factor. For example, in Warlpiri (Nash 1980), CVV is

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[1]I will use the traditional abbreviations CV, CVV, CVR (R for resonant), and CVC, with the understanding that the onset is irrelevant for our purposes. That is, CV means C_0V, etc.

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heavy, whereas CVR[2] is light. Thus in this language, heavy syllables are those whose rime segments exceed a certain absolute sonority level. The reverse case, in which CVR (or CVC) is heavy and CVV is light, is unattested (Prince 1983). In summary, we may identify the following two dimensions in the correlation between rimal material and syllable weight:

(1) a. Increasing *number* of rime segments may correlate with greater weight, but never with less weight.

b. Increasing *sonority* of rime segments may correlate with greater weight, but never with less weight.

My starting assumption is that the correlations in (1) are neither accidental nor insignificant. In this paper I outline a theory in which the reverse correlations simply could not obtain. Within this approach there is no way to represent a QS system in which a heavy syllable contains *less* material then a light syllable. In fact, if this approach is correct, quantity sensitivity is merely an epiphenomenon that reduces to the interaction of metrification with a stepwise syllabification process. The theory crucially posits an early stage in the derivation at which only "core" CV syllables exist. Full syllabification is delayed until a later point, possibly *after metrical structure has been built*. I will show that the distinction between degrees of quantity sensitivity, as well as between QS and non-QS languages, follows without stipulation.

We will use the Muskogean language Creek (Haas 1977) to illustrate the theory. In the next section I present the data concerning Creek accent placement, and demonstrate two opposing analyses.

2 CURRENT ANALYSES

The distribution of tonal accent in Creek words is generally determined by the presence of lexically accented morphemes. However, in words with no lexically marked tones, the placement of the accent is predictable. Haas's generalization, and a representative data sample are given in (2-3):

(2) **Creek tonal accent** (summarized from Haas 1977:202-203):

a. CVV and CVC syllables are counted as heavy (H); CV syllables are light (L).

[2]There are no coda obstruents in Warlpiri.

b. In any string of L syllables containing no fixed accents the tonal accent is placed on the last *even-numbered* syllable, counting from the last H (or from the beginning of the word if there is no H).

(3)	a.	LĹL	hicíta	'one to see one'
		LLLĹ	ahicitá	'one to look after, watch one'
		LLLĹL	imahicíta	'one to look after for (someone)'
		LLLLLĹ	isimahicitá	'one to sight at one'
	b.	LĹ	ifá	'dog'
		H́L	sókca	'sack, bag'
	c.	HLĹ	hoktakí	'women'
		HLĹL	alpatóci	'baby alligator'
	d.	LHLĹL	yakaphoyíta	'two to walk'

Note how the heavy syllables interrupt the "odd-even" metrical count. I will now review how the Creek data can be accommodated according to two different viewpoints on the calculation of stress placement. The focus here is on what each framework has to say about the issue of quantity sensitivity, and in particular, about the correlations in (1).

2.1 Halle and Vergnaud (1987)

Simplifying drastically, for our purposes the most salient features of the framework developed in Halle and Vergnaud (1987) (hereafter HV) are given in (4):

(4) a. Metrical feet are built on grid marks which project directly from segmental timing slots.

b. The processes which actually build metrical structure are blind to all information not directly represented on the grid. (syllable structure, segmental features...)

Halle and Vergnaud make no attempt to configure the theory to handle only attested cross-linguistic patterns of quantity sensitivity (i.e. those that obey the correlations in (1)). In fact, (4b) would at first glance appear to actually prevent properties of syllable structure from having any effect on metrical structure. However, the HV theory provides a way out. Although the parsing mechanisms of the grid are indeed blind, they must have an initial grid configuration to work with (i.e.

there must be some asterisks to parse). Therefore, to offset the drastic restriction on the parsing procedure, the procedures which produce the initial state of the grid (projecting marks from the segmental tier) are *not* blind. This leads to the possibility of QS systems:

(5) **Quantity Sensitivity under HV**
Language-particular rules may project different material onto the grid depending on syllable structure. Parsing of grid marks must respect any existing structure.

In short, since the grid cannot actually see syllable weight, a language must contain specific rules that strategically put irregularities in the initial state of the grid, in order to "fool" the parsing mechanism into showing syllable quantity effects even though the grid knows nothing about syllables.

Let us see how this system handles the Creek data. The language-particular rules establishing the initial state of the stress grid are given in (6). The parameters necessary to produce the correct foot structure are shown in (7).

(6) **Creek projection rules (HV, 1987)**

a. Assign line 0 asterisks to all vowels.

b. Assign line 1 asterisks to vowels that head branching rimes.

(7) **Creek metrical constituency parameters**

a. line 0 parameters: right-headed, bounded, LR$^{\rightarrow}$

b. line 1 parameters: right-headed, unbounded

Here I am glossing over some specific features of the analysis. For instance, HV also propose a rule of clash deletion in order to ensure that the final vowel does not receive the accent if it heads a degenerate foot (i.e. if it is the only asterisk in its foot).

To illustrate the HV analysis, (8), (10), and (12) show the initial states of the stress grids for three representative Creek words, given the projection rules in (6). When metrical constituency is built, the footing parameters in (7) blindly determine the structures in (9), (11), and (13).[3] Since the footing must respect

[3]There will also be a further process of conflation, which isolates that vowel which heads the constituent on line 1. We will disregard this detail here.

the initial configuration of the grid, we see that the first foot in (9) and (11) is forced to be unary. That is, given the presence of the initial line 1 asterisk in (8) and (10), and the fact that the feet are right-headed, there is no other possible realization of the parameters in (7) that would respect the initial structure. It is this line 1 asterisk and only this line 1 asterisk that makes Creek appear to be quantity sensitive, although the feet themselves are not.

```
(8)   ℓ2                                (9)   ℓ2          *
      ℓ1   *                                  ℓ1   (*     *)
      ℓØ   *  * *                             ℓØ   (*)(* *)
           hoktaki                                 hoktaki

(10)  ℓ2                                (11)  ℓ2          *
      ℓ1   *                                  ℓ1   (*     *)
      ℓØ   *  * * *                           ℓØ   (*)(* *)*
           alpatoci                                 alpatoci

(12)  ℓ2                                (13)  ℓ2            *
      ℓ1   *                                  ℓ1     (*     *)
      ℓØ   * *  * * *                         ℓØ   (* *)(* *) *
           yakaphoyita                             yakaphoyi ta
```

Although this analysis is descriptively correct (that is, in each example the line 2 asterisk correctly identifies the accented vowel), the problem is that the effects of syllable weight come completely out of the statement in (6b), which is a stipulation, and HV make no effort to constrain the rules of this kind. There could easily be a language with a corresponding rule that referred to syllables with non-branching rimes, or even high rounded vowels. So, the fact that quantity sensitivity follows the generalization in (1) is simply an accidental subcase of a much more powerful theory allowing the initial state of the metrical grid to be sensitive to any conceivable properties of the world around it. Thus, HV really have no theory of quantity sensitivity, since they offer no predictions about what kind of quantity sensitivity to expect in language.

2.2 *Rhythmic Theory*

Under an alternative point of view (see Hayes 1991, McCarthy and Prince 1986, 1990, Prince 1990, and references cited there), there is something basic about syllable weight and its intimate relation to the construction of metrical feet, as a function of the "rhythm" that syllable weight helps establish. This radically different viewpoint is shared, in some form or another, by an enormous number of researchers, and I will focus in particular on the body of work associated with the framework of "Prosodic Morphology" (McCarthy and Prince 1986, 1990), and the extensive research in the field of stress by Hayes (1991). Among the assumptions made by these "rhythmic theorists"[4] are those in (14):

(14) a. Metrical feet are built directly on syllable nodes, as given by the Prosodic Hierarchy in (15).

b. Metrical structure is built by matching the syllables of a word with the following basic foot templates, provided by UG:
[LL], [H], [LH] (*[HL])

(15) prosodic word > foot > syllable > mora

To describe the tonal accent placement in Creek, we need (16). This results in the metrical parsings in (17–18):[5]

(16) **Creek accent rules**

a. CVC and CVV count has heavy (i.e. they contain two moras).

b. Form iambs (right-headed feet) from left to right.

c. Place tonal accent on the head of the rightmost foot.
(using the End Rule of Prince 1983, Hayes 1991)

```
(17)          x                 (18)             x
       [H] [L  L]  L                   [L H]  [L L]   L
        al  pa to  ci                  yakap  hoyi    ta
```

The relevant case is (17). As was the case in the discussion of HV, for this example we must prevent the first two syllables from parsing as a foot. For the rhythmic theory, this follows directly from the basic foot inventory (14b): there is no [HL] foot.

[4] I owe this term to Michael Kenstowicz, p.c.

[5] For our purposes, the reason the last light syllable is left unparsed in (18) is that there is no valid foot template that contains just one light syllable.

Within this framework, quantity sensitivity is built in to the basic foot inventory, the origins of which are generally attributed to deeper cognitive principles of rhythmic grouping. The most specific attempt to formulate this is Prince (1990), where each possible (at most binary) grouping of syllables is assigned a "harmony" value $\mathcal{H}$, according to the following formula:

(19) **Grouping Harmony:** (Prince 1990)
Let *G* be a Rhythmic unit, at most binary on syllables or moras.
Let X be the first element of G.
Let Y = G − X.
Let |Z| be the size of Z.
We define the Harmony $\mathcal{H}$ of G as follows:
$\mathcal{H}$ (G) = |Y| / |X|

The result of this is that the [LH] foot will have a very high harmony, while its mirror image, [HL], has a very low value of $\mathcal{H}$, low enough so that it is generally not available as a possible foot. While the Grouping Harmony formula does create a ranking of feet that leads to the basic foot inventory,[6] this proposal still incorporates the concept of the "size" of a rhythmic unit in terms of the number of moras it contains. However, it does not provide any reason that syllable size should be relevant in the first place. Furthermore it is not obvious why the correct formulation did not happen to let X be the *last* element of G, which would reverse the distinction between the LH foot and the HL foot. In other words, the correlations in (1) could have been otherwise, without affecting the general integrity of the Grouping Harmony formula.

Notice that syllables are treated as if they were simply marked with diacritic features (e.g. "H" and "L"). Is this simply a shortcut, or is it a real feature of this framework that syllable weight must be treated in this way? It seems that this is no accident, rather, it follows directly from the prosodic hierarchy itself. Since the basic foot types are encoded in terms of syllable weight, and the moras (weight units) themselves are subsyllabic (i.e. not directly visible by the parsing procedure), syllable weight *is* essentially a diacritic marking on the syllable node, because the real weight information is not metrically local to the parsing mechanism. In short, building QS feet on top of syllable nodes violates the condition of Metrical Locality (Hammond 1984; 111) unless the quantity of a syllable is

[6]Grouping Harmony alone would also admit [HH] as a possible foot, but this foot would in any case violate another principle, the Weight-to-Stress Principle, which I will not discuss here.

marked on the node itself. Therefore, I conclude that feet cannot be built on top of syllable nodes if an explanatory account of quantity sensitivity is sought.[7]

3 A PROPOSAL

With this background, I would now like to turn to the specific proposal of this paper. It revolves around the assumptions in (20), that is, the crucial assumptions from HV (4):

(20) a. Metrical feet are built on grid marks which project directly from segmental timing slots. (=4a) This rejects the prosodic hierarchy.

b. The metrical grid is a general purpose counting device. In particular it is subject to the restriction in (4b), that it be blind to syllabic information.

I concluded in the last section that we cannot account for the behavior of quantity sensitivity by building feet on top of syllable nodes. I will assume, as proposed by HV, that foot constituents are direct groupings of subsyllabic units, and this in principle avoids the locality problem mentioned above. Since this failure of metrical locality, which leads to the treatment of syllable quantity as a diacritic, is inherent in the prosodic hierarchy (15), this formulation of the hierarchy must be rejected.

While I adopt fundamental notions of HV, I propose to drastically constrain the HV system by eliminating the power made possible by (5). In fact, I propose that the projection of material onto the grid (i.e. the creation of the initial state of the grid) is highly restricted by UG, with only one possibility for parametric variation. Specifically, I claim that the *only* possible relation between the grid and the outside world is that a timing unit can project an asterisk onto line 0. This means we cannot project a mark directly onto line 1.[8] Thus we rule out any possible account of the Creek facts along the lines of that in section 2.1, since there it was necessary to project an initial line 1 asterisk for the head of each heavy syllable.

I will call a timing unit that projects a line 0 asterisk a **Weight-Bearing Unit** (WBU). This is stated as the Metrical Projection Principle (21). However, I assume that UG strictly determines what counts as a WBU, as in (22).

[7]See Kager (1991) for a rhythmic approach that is also based on this conclusion, and is similar in other interesting ways to the proposal in this paper.

[8]Nor can we project idiosyncratic foot boundaries onto line 0, as in Halle (1990).

(21) **Metrical Projection Principle (Universal)**
A timing unit projects a line 0 asterisk iff it is a WBU.

(22) **Weight-Bearing-Units (WBU's)**
X is a WBU iff:

a. X is RIMAL (to follow from the theory of syllable structure)

b. X meets a minimum sonority requirement.(LANGUAGE SPECIFIC)

The sonority requirement in (22b) provides the only way for languages to vary. The **Sonority Threshold Parameter** specifies the level on the sonority hierarchy below which a segment cannot be a WBU, even if it is RIMAL (for the current purposes, I will assume the impoverished version of the sonority hierarchy given in (24)).

(23) **Sonority Threshold Parameter (Language-particular)**
Each language specifies the minimum sonority level of its WBU's.

(24) **Sonority Hierarchy** (simplified, for concreteness)
3. vowels (V)
2. nonvocalic sonorants (R)
1. obstruents (C)

All things being equal, the range of settings of the Sonority Threshold Parameter must account for the effects of quantity sensitivity that we see across languages. Recall that we set out to build a theory that provides a reason for why the generalizations in (1) hold. Only the principles in (21) and (22) determine what projects on the metrical grid. Thus it must be that when a language projects more WBU's for some syllables than for others, it is "quantity sensitive." Syllables containing one WBU will behave as light, and those with more (generally no more than two) will be heavy. The lower the setting of the sonority threshold, the easier it will be for a syllable to contain more than one WBU.

Returning to Creek, since we know that CVV, CVR and CVC syllables are counted as heavy, it must be that the sonority threshold in Creek is set to allow all of these syllables to project two WBU's, as opposed to CV syllables, which will project only one.

(25) a. **Sonority Threshold (Creek): 1**
i.e. *any* segment (1 or higher) is sonorous enough to be a WBU.

b. **Metrical Footing parameters: see (7)**

Let us apply what we have so far to the Creek data. We will keep the HV metrical footing parameters as in (7), but of course now we reject their language-particular projection rules in (6), in favor of the universal Metrical Projection Principle and the Sonority Threshold parameter. In (26) and (27) we see the metrical structures produced for two representative words.

```
(26)  ℓ2            *
      ℓ1    (*       *)
      ℓ∅    (**) (*  *)  *
            (al)(pa)(to)(ci)

              alpatóci
```

```
(27)  ℓ2                           *
      ℓ1         (*        *       *)
      ℓ∅    (*    *)(*     *) (*   *)
            (ya)(ka  p)(ho)(yi)(ta)

            predicts  *yakaphoyitá
```

Note that line 0 here differs crucially from HV: in each case, a coda consonant has projected its own asterisk (the /l/ of *alpatóci* and the /p/ of *yakaphoyíta*), since the sonority threshold is met and the consonants have been syllabified as rimal. It would be a violation of the Metrical Projection Principle if these WBU's did not project. Once projected, these asterisks look like any other grid mark as far as the foot parsing is concerned. In (26), we achieve the correct accent placement, on the penultimate vowel.[9] The projection of the coda /l/ of the first syllable in this case is crucial, since this WBU in effect causes the first syllable to be a foot all in itself. This is, after all, the obvious generalization behind its effect on QS metrification, and is the basis of both the HV and rythmic accounts. However, the structure in (27) would entail final accent in a word that actually bears penultimate accent. In this word, the coda /p/ of the second syllable is the cause of the problem, rather than the solution, since if it were not present, we would again derive the correct penultimate accent.

Intuitively, the problem here is that not all WBU's should have the same status. Some (namely the head vowel of a nucleus) can actually bear the accent, but the others, (i.e. coda consonants, and the second half of a long vowel) can never bear the accent, but they still influence where the accent falls. Thus there seems to be a further distinction involved. In short, not all weight-bearing units are possible accent-bearing units.

[9] I have not included the final asterisk in the metrical parse in (26). Whether this should be treated as the result of deletion under clash (as in the HV account) or as simply an unparsed asterisk (analogous to the final "orphan" syllable in the rythmic theory analysis in (18)) brings out subtleties in my proposal that are far beyond the matter at hand, so I will not pursue the question.

Something, then, is required to enable the grid to distinguish between the head of the nucleus and all other rimal elements. However, this appears to be in direct violation of the central assumption that the grid is blind to syllable structure. I will now show that there is a way to predict this distinction while still maintaining the strictest conception of the grid as a blind counting device. We require the following two assumptions, the second of which I believe to be the null hypothesis given the first:

(28) **Hypothesis 1:**
Syllabification progresses in (at least two) discrete stages, core (CV) and full. (see Steriade 1982, Dell and Elmedlaoui 1985, 1988, Clements 1988, Harris 1991, Idsardi 1990, and Sloan 1991)

(29) **Hypothesis 2:**
Metrical structure may be built at the stage of core syllabification, before final syllabification.

Let us now suppose that Creek builds foot structure at the early stage of CV syllabification, before there are any codas. Since no segment can be a WBU until it is RIMAL, no unsyllabified segment, regardless of its sonority, may project an asterisk. The foot structure is built at this point, as shown in (30) and (32).

(30)
```
ℓ2                    *
ℓ1        (*          *)
ℓ0   (*     *)  (*    *)  *
     (ya)(ka)p(ho)(yi)(ta)
```

(31)
```
ℓ2                        *
ℓ1          (*            *)
ℓ0   (*       *)#  (*     *)  *
     (ya)(ka p)(ho)(yi)(ta)
```

yakapahoyíta

(32)
```
ℓ2                    *
ℓ1        (*          *)
ℓ0   (*     *) (*     *)
     (a)l(pa)(to)(ci)
```

(33)
```
ℓ2                    *
ℓ1        (*          *)
ℓ0   (*#    *) (*     *)
     (al)(pa)(to)(ci)
```

**alpatocí*

Now the footing in (30) already predicts the right penultimate accent, but that in (32) predicts the wrong accent. However, there is a relevant distinction to be made between (30) and (32). This can be seen in (31) and (33), which give the same grid after full syllabification has occurred. At this later stage, the newly syllabified coda consonants are suddenly WBU's (by the definition in (22)) and therefore project onto the grid.[10] We now see that, whereas the new # in (31) projects in between the first two feet, the # in (33) must project into the middle of the first foot. I claim that this is the explanation for why the metrification in (32–33) is bad. That is, there is an additional generalization that must hold, which we might call **Foot Integrity**:[11]

(34) **Foot Integrity**
No grid mark may project into an existing metrical constituent.

So, (33) violates Foot Integrity. What happens when a derivation produces such a violation? I assume the grid parameters simultaneously define the entire class of possible parses, each with a relative preference value, where the branch of the derivation that ultimately has the best or most economical value is the one that surfaces.[12] To spell this out concretely, I have taken an input string of five asterisks and given the class of possible LR$^{\rightarrow}$ and RL$^{\leftarrow}$ parsings, ranked first according to an economy principle that favors parses with the least number of feet (basically, the Maximality Condition of HV 87), and second according to the "directionality" parameter:

(35)	<u>**Left-to-Right (LR$^{\rightarrow}$):**</u>	(36)	<u>**Right-to-Left (RL$^{\leftarrow}$):**</u>
a.	(* *)(* *)(*)	a.	(*)(* *)(* *)
	(* *)(*)(* *)		(* *)(*)(* *)
	(*)(* *)(* *)		(* *)(* *)(*)
b.	(* *)(*)(*)(*)	b.	(*)(*)(*)(* *)
	(*)(* *)(*)(*)		(*)(*)(* *)(*)
	(*)(*)(* *)(*)		(*)(* *)(*)(*)
	(*)(*)(*)(* *)		(* *)(*)(*)(*)
c.	(*)(*)(*)(*)(*)	c.	(*)(*)(*)(*)(*)

In (35a), all three parses equally satisfy Maximality, but the LR$^{\rightarrow}$ parameter, under this interpretation, means that degenerate feet should come as far to the right as possible. On the other hand if we look at (36a), since the directionality

[10] I use #'s rather than *'s for these new WBU's as a typographical convention only. They are crucially identical as far as the grid is concerned, except that they arrive later.

[11] I assume this is the reflection of the strict government requirements in binary feet, but I will leave it here as an independent condition.

[12] This interpretation agrees with Prince and Smolensky (1991).

parameter is **RL**$^{\leftarrow}$, the most highly valued parse puts the degenerate foot as far to the *left* as possible. The same relative ordering applies to the groupings in (35b) and (36b), all of which are worse than the (a) parsings, since these contain four feet instead of three. Finally, in (35c) and (36c) we see the worst possible case according to Maximality, since five asterisks are parsed into five feet. While they differ in their level of desirability, each of these groupings is a completely valid instantiation of the grid parameters, and is available in case a higher-valued parse becomes untenable.

Under this conception, we must give Foot Integrity the highest priority. That is, even the lowest valued parse (e.g. (35c) and (36c)) is acceptable in order to comply with Foot Integrity. So, even though the parse in (32)–(33) yields a Foot Integrity violation, there are still other branches of the derivation available with different grouping of the line 0 asterisks. These are ranked by the Creek footing parameters as shown in (37).

(37) **Other possible parses of (32) (in order of preference):**

```
a.   ℓ0   (*    *  (*) (*)
          (a)l(pa)(to)(ci)

b.   ℓ0   (*)  (*    *) (*)
          (a)l(pa)(to)(ci)

c.   ℓ0   (*)  (*) (*    *)
          (a)l(pa)(to)(ci)

d.   ℓ0   (*)  (*) (*) (*)
          (a)l(pa)(to)(ci)
```

Using parse (37a), we will still get the same Foot Integrity violation, since the /l/ of the initial syllable will again end up projecting into the first foot when it syllabifies. However, parse (37b), the next best, will avoid this problem, because now the # projects safely between the first two feet. This is shown in (38) and (39), and this parse in fact yields the correct accent placement. The entire range of Creek data has now been accounted for.

```
(38)  ℓ2                 *
      ℓ1    (*           *)
      ℓ0    (*)  (*     *)  *
            (a)l(pa)(to)(ci)

(39)  ℓ2                   *
      ℓ1    (*             *)
      ℓ0    (*)#  (*     *)  *
            (a l)(pa)(to)(ci)

            alpatóci
```

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4 CONCLUSION

I have tried to show with the Creek examples that the correlations in (1) are at the heart of an explanatory theory of quantity sensitivity. In other words, we have captured the Creek pattern without making use of any concept of syllable quantity (not even in hidden form, e.g., *having a branching rime* or *having two moras*, or *size of a rhythmic unit*). Under this proposal, what is called "quantity sensitivity" is really the interaction between the strict definition of Metrical Projection, plus the building of foot structure before full syllabification, and finally, the Foot Integrity condition. The way languages can vary is determined solely by the Sonority Threshold parameter and of course by their syllabification constraints. There is really no such thing as quantity sensitivity as a parameter; all languages must set the Sonority threshold,[13] and all languages make certain choices about syllable structure.[14] Given the initial stage of core syllabification and consequently the option of building metrical feet at this point in the derivation,[15] if any subsequent syllabification yields new WBU's, the Metrical Projection Principle and Foot Integrity will give rise to feet that are "quantity-sensitive."

Finally, my proposal derives the basic inventory of foot types in (14b). Specifically, the [HL] (and also [HH]) foot is ruled out (or severely discouraged) automatically now, because this foot in fact contains an inherent Foot Integrity violation, as shown in (40). Furthermore, the particular way in which this proposal rules out the HL foot is intriguing: the asymmetry in the set of foot types is just the metrical reflection of another asymmetry in syllable structure. The rime is systematically left-headed. Consequently, after core syllabification, any further syllabification will only add rime segments on the *right*.

(40)				
	a.	[LL]	(* *)	
	b.	[LH]	(* *) #	
	c.	[H]	(*) #	
	d.	[HL]	(*# *)	← violates Foot Integrity

[13]Warlpiri (as mentioned in section 1) can now be understood to differ from Creek in that it sets the Sonority Threshold at 3 instead of 1, allowing only V's to be WBU's.

[14]If a language like Warlpiri also has an additional ban on CVV syllables, then it will give the appearance of being "non-QS."

[15]If a language happens to build metrical structure *after* final syllabification anyway, then it will simply look like a mora-counting language, as in the HV-style analysis of Winnebago (HV, Halle 1990). If, as rythmic theorists argue, mora-counting languages do not exist, then we will have to somehow prevent the option of waiting to build metrical structure after full syllabification.

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